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K/EM-291

SANITIZED VERSION OF WEEKLY PROGRESS REPORTS AUGUST 30-SEPTEMBER 27, 1948

(SANITIZED VERSION OF CRD DOCUMENT #s KP-5/PTS 2-5)

Compiled by
S. G. Thornton
Environmental Management Division
OAK RIDGE K-25 SITE
for the Health Studies Agreement

December 14, 1995

Oak Ridge K-25 Site
Oak Ridge, Tennessee 37831-7314
managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400

Approved for issue: W. C. Hartman

Date of issue: September 9, 1948

This document consists of 5 pages No. 1 of 7 copies. Series A

XP-5, Pnt. 2

CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

CHEMICAL OPERATIONS

Weekly Progress Report for August 30, to September 6, 1948

W. C. Hartman

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By authority of: CG-NGD-4
(classification guide)

ADC or ADD signature (first reviewer) Date 12/19/94

ADD signature (final reviewer) Date 12/23/94

CONFIDENTIAL

CHEMICAL AREA

Fluorine Plant

Fluorine produced	123 pounds
Consumed by Conversion Unit	35 pounds
Consumed by 300 Section	63 pounds
Consumed by 1400 Section	18 pounds

Nitrogen Plant:

	L-28 (Gallons)	L-28 (Cubic Feet)	G-74 Pipeline (Cubic Feet)	G-74 Cylinders (Cubic Feet)
Process	1891	175,863	301,970	
K-1401	724	67,332	36,270	
Laboratories	954	88,722		
Evaporation	554	51,564		
K-1300 Area			100	
Cylinder Stores				14,920
Y-12				14,675
Totals	4123	383,481	338,340	29,595

Oxide Conversion Unit:

Oxide charged	47,496 grams
TF_6 produced	13,855 grams
Ash produced	10,629 grams
Fluorine used	15,855 grams

Decontamination:

A total of 51 items were decontaminated during the past week. Six (6), Size 3 converters were decontaminated, one (1) of which had to be re-run. Several design changes are being started on the converter Decontamination and Recovery Units.

Mercury Recovery Unit:

160 pounds of distilled mercury are ready to ship. Total mercury shipped to date, 16,139 pounds.

Oil Recovery Unit:

No oil recovery production.

[redacted]

CASCADE SERVICES DEPARTMENT

Leak Testing:

	Cells	Cell C-816 System	Misc. Equip.	AC Pumps	Leaks Found	Bldg. Lines
Vacuum Testing	-	-	-	-	-	-
Pressure Testing	3	2	-	1	2	1
CO_2 Testing	-	-	-	-	-	-
C-816 Testing	-	-	-	-	-	-

Special Materials Handling:

	Cells	Misc.	Discharged and/or Charged	Issued	Visible AC Pumps	Visible Other Equip.	Contaminated Spills P.G.	Contaminated Spills Oil	Contaminated Excess Alpha
C-216 Charging	9	4	-	-	-	-	-	-	-
C-616 Charging	-	-	0 Cyls.	-	-	-	-	-	-
Carbon and Alumina Traps	-	-	17	-	-	-	-	-	-
C-816 Storage	-	-	-	9.2 lbs.	-	-	-	-	-
Field Decont.	-	3	-	-	1	8	2	4	47

General Service

	Service Calls	Valves Purged	Valves Buffered
Purge & Buffer	2	10	10

Special Service or Reports

(a) The usual decontamination, pressure testing, and C-216 charging were required for converter replacement jobs in 3 cells.

(b) No further work done to obsolete mobile tails unit.

FLUOROTHENE PLANT

Raw monomer	1,543.0 pounds
Refined monomer loaded	2,416.5 pounds
Monomer recovered	1,274.0 pounds
Raw Fluorothene	958.5 pounds
Average polymerization	39.5%

The bombs which were conditioned with C-216 have not been improved enough to warrant conditioning all of the reactor bombs.

The new bombs have been completed by the Machine Shop and are now in service. No cores have been removed from the bombs yet, however, it is hoped that they will be cleaner and easier to remove because of the high polish on the inside of these bombs.

The special core which was made for the Fluorocarbon Section of Lab. D, had an N.S.T. of 240°C and polymerized 50% in 5 days. This core had approximately seven (7) times the normal charge of promoter.

PROCESS LABORATORY

I. Chemical Analyses:

Type Samples	Samples	Determinations
C-216 Conditioning	34	34
C-616 Bulb	34	10
Purge Gas (C-616)	12	12
Purge Gas (C-216)	0	0
Dew Point	64	64
Hoke Tube (C-616)	152	0
Bomb from K-631 & K-131 (C-616)	30	0
K-1301 - C-216 Generation	12	12
Totals	338	132

II. Eleven (11) carbon traps were scanned.

RADIATION MONITORING

1. Sixty six (66) Beta-Gamma surveys were made in K-1301 and K-1303.

2. Alpha surface reading and air-borne samples.

   (a) Air-samples, surface and personnel readings were taken during the following seal changes and pump changes:
   K-305-1, C6-2A, K-310-2, C5-7-8-1A-2B-3B-1B-seals. K-301-2-C7-1B and K-301-5, C4-2B pump.

   (b) Surface readings, hand counts and air-samples were taken during the following converter changes:
   K-306-7-C12, K-306-5-C10, and K-305-8-C2.

   (c) Air samples and surface readings were taken in K-131 feed room.

3. 108 Film badges were distributed.

Continued next page

[redacted]

RADIATION MONITORING - Continued

SUMMARY:

71 Routine air-samples
78 Special air-samples
1,219 Surface readings
269 Hand counts and personnel readings

Three C-616 releases were monitored during the week of September 1, 1948. A C-616 release occurred in K-131 "A" Bath at 3:55 PM, when line from feed cylinder broke. Air samples were taken approximately 6 feet from break and in center of feed room. Results were below tolerance at 5:15 PM. Surface readings were taken on baths and floor of feed room. Area was evacuated during the release.

On September 3, 1948, at 2:50 PM, a release occurred at K-1303, when two 10" lines that were removed from K-311-1, were delivered to K-1303 for decontamination. These lines contained solidified C-616, on end of which was covered with paper. This end of the line struck the fence, causing the release. Air samples were taken within the release area and surface readings taken on the truck, fence and surrounding ground. The area was evacuated during the release.

On September 5, 1948, a release occurred in K-131 on the "B" Bath. Flexible hose to cylinder broke, causing a small release. Air samples were taken at the "B" Bath and in center of feed room. Room was below tolerance in approximately 15 minutes. After the spill, surface readings were taken on bath and floor of the feed room. The area was evacuated during the release.

W. C. Hartman

W. C. Hartman
Chemical Operations

WCH:gb

Approved for issue: G. T. E. Sheldon
Date of issue: September 16, 1948

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Series A, KP-5, Part 3

CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

CHEMICAL OPERATIONS

Weekly Progress Report for September 6, to September 12, 1948

W. C. Hartman

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By authority of: CGPGD-4
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ADC ADD signature (first reviewer) Date 20 May 94
Sam D. Wheeler 9/23/94
ADD signature (final reviewer) Date

-1-

CHEMICAL AREA

Fluorine Plant

Fluorine produced	101 pounds
Consumed by Conversion Unit	37 pounds
Consumed by 300 Section	54 pounds
Consumed by 1400 Section	10 pounds

Nitrogen Plant

	L-28 (Gallons)	L-28 (Cubic Feet)	G-74 Pipeline (Cubic Feet)	G-74 Cylinders (Cubic Feet)
Process	2043	189,999	304,560	
K-1401	660	61,380	17,090	
Laboratories	922	85,746		
ABC	14	1,302		
Evaporation	986	91,666		
K-1405			250	
K-1300 Area			70	
Cylinder Stores				6,115
Totals	4,625	430,093	321,970	6,115

Oxide Conversion Unit

Oxide charged	36,450 grams
TF_6 produced	0
Ash produced	12,641 grams
Fluorine used	16,782 grams

Decontamination

A total of 105 items were decontaminated during the past week. Ten (10), size 3 converters were decontaminated. Design changes are being made.

Mercury Recovery Unit

376 pounds of distilled mercury are ready to ship. Total mercury shipped to date, 16,139 pounds.

Oil Recovery Unit

No oil recovery production.

CASCADE SERVICES DEPARTMENT

Leak Testing

	Cells	Cell C-816 System	Misc. Equip.	Ac Pumps	Leaks Found	Bldg. Lines
Vacuum Testing	-	-	-	-	-	-
Pressure Testing	1	2	-	-	3	-
CO_2 Testing	-	-	-	-	-	-

Special Materials Handling

	Cells	Misc.	Discharged and/or Charged	Issued	Visible AC Pumps	Visible Other Equip.	Contaminated Spills P.G.	Contaminated Spills Oil	Contaminated Excess Alpha
C-216 Charging	1	-	-	-	-	-	-	-	-
Carbon and Alumina Traps	-	-	7	-	-	-	-	-	-
C-816 Storage	-	-	-	21,987 lbs.		0	-	-	-
Field Decon.	-	1	-	-	-	4	2	4	39

General Service

	Service Cells	Valves Purged	Valves Buffered
C. C. Backwash	0	-	-
Purge & Buffer	0	-	-

Special Service Reports

(a) Decontamination, pressure testing, and C-216 charging were required for converter replacement job in one cell.

(b) A total of 21,964 gallons of C-816 was pumped from K-300-C to S process buildings during the past week.

(c) No further work done to obsolete mobile tails unit.

[redacted]

FLUOROTHENE PLANT

Raw monomer	1,621.0 pounds
Refined monomer loaded	2,323.0 pounds
Monomer recovered	1,106.0 pounds
Raw Fluorothene	969.5 pounds
Average polymerization	40.6 %

1. The cores from the new reactor bombs were very dirty in appearance and hard to remove from the bombs. This was probably due to the absence of any reaction film on the inside of the bombs. There was an excessive amount of reaction between the promoter and the stainless steel surface of the bombs.

2. Work was started toward rebuilding the alcohol recovery still. It should be completed on or about September 17, 1948.

PROCESS LABORATORY

I. Chemical Analyses:

Type Samples	Samples	Determinations
C-216 Conditioning	5	5
C-616 Bulb	2	2
Purge Gas (C-616)	4	4
Purge Gas (C-216)	0	0
Dew Point	25	25
Hoke Tube (C-616)	85	0
Bomb from K-631 & K-131 (C-616)	26	0
Totals	147	36

II. Scans were made on five (5) carbon traps.

III. Two (2) repair jobs were done on sampling buggies.

RADIATION MONITORING

1. Fifty-two (52) Beta-Gamma surveys were made in K-1303 and K-1301.

2. Alpha surface readings and air-borne samples:

(a) Routine surveys were made in the following locations:

K-306-7, P. W. - K-1303 - K-1301.

(b) Air samples, surface and personnel readings were taken during the following seal changes:

K-302-1-Cell 3, 5B seal, - K-305-3, Cell 2, - 2B seal

RADIATION MONITORING - cont'd

(c) Surface readings, hand counts and air-samples were taken during the following converter change, K-305-6, Cell 4.

(d) Surface readings on the following trucks for Mr. Ogle:

AE-2552, AE-2562, AE-534 and AE-578.

3. One hundred and eight (108) film badges were distributed.

SUMMARY:

98 Routine air samples
15 Special air samples
2,535 Surface readings
60 Personnel readings and hand counts.

W C Hartman

W. C. Hartman
Chemical Operations

WCH:gb

[redacted]

Approved for issue: G. T. E. Sheldon

Date of issue: September 24, 1948

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Report No. KP-5. Part 4.

CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

CHEMICAL OPERATIONS

Weekly Progress Report for September 12, to September 19, 1948

W. C. Hartman

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[redacted] 20 May 94
ADC or ADD signature (first reviewer) Date

Sam D. Wakefield 9/23/94
ADD signature (final reviewer) Date

[redacted]

CHEMICAL AREA

Fluorine Plant

Fluorine produced	137 pounds
Consumed by Conversion Unit	31 pounds
Consumed by 300 Section	54 pounds
Consumed by 1400 Section	28 pounds

Nitrogen Plant

	L-28 (Gallons)	L-28 (Cubic Feet)	G-74 Pipeline (Cubic Feet)	G-74 Cylinders (Cubic Feet)
Process	1,854	172,422	318,670	
K-1401	669	62,217	62,180	
Laboratories	1,063	98,859		
AEC	21	1,953		
Evaporation	387	35,961		
K-1401			18,920	
K-1300 Area			70	
Cylinder Stores				12,474
Y-12				14,675
Totals	3,994	371,412	399,840	27,149

Oxide Conversion Unit

Oxide charged	34,296 grams
Ash produced	8,149 grams
Fluorine used	14,043 grams

Decontamination Unit

A total of 94 items were decontaminated during the past week. Seventeen (17), size 3 converters were decontaminated.

Mercury Unit

192 pounds of distilled mercury produced this week, making a total of 568 pounds on hand.

Oil Recovery Unit

67 pounds of Light MFL on hand. 34 pounds of MFL, ready to be shipped.

[redacted]

CASCADE SERVICES

(1) Decontamination, pressure testing and C-216 charging were required for a converter replacement job in one (1) cell.

(2) Purging of the obsolete mobile tails unit, K-1410, was resumed with draining of oil and flushing of B-R pumps; openness checks in oil, air and P.G. lines; continous purging and heating, etc. Thus far, over 100 pounds of P.G. has been purged into carbon traps. (This does not include the contaminated oil and solid material which have also been removed.)

(3) The enriched feed charging unit which was moved to K-27 for use by Operations personnel developed a large leak in the heated enclosure. The cell connecting pipe had been removed from the cell prior to disconnecting from the unit and the strain from the weight of the pipe broke the main feed line in the unit. Cascade Services personnel assisted in purging of this unit prior to repairs. Operations personnel are conducting the necessary repairs.

(4) The carbon and alumina storage of Vault 6A has been physically inventoried to check the bookkeeping figures on this material. The actual usage of carbon and alumina varies a great deal from estimated usage figures prepared in September, 1947; however, our supply is sufficient to delay any immediate establishment of order-points on any of this material. However, due to the increased use of soda lime traps, an order-point has been established in the Stores Department for 4- mesh soda lime.

(5) An experimental system for decanting dry C-816 has been set up in the K-300-C unloading shed, and test runs have been started.

(6) Cascade Services has no spare Infra-Red Analyzers on hand. All spare IRA's have been left in the elctronic shop, K-1024, and are available to Operations personnel from that location instead of being transferred through Cascade Services.

Leak Testing

	Cells	Cell C-816 System	Misc. Equip.	Leaks Found	Bldg. Lines	AC Pumps
Vacuum Testing	-	-	-	-	-	-
Pressure Testing	1	4	5	4	-	-
CO_2 Testing	-	-	-	-	-	-

Special Materials Handling

	Cells	Misc.	Discharged and/or Charged	Issued	Visible Contam. AC Pumps	Other Equip.	Spills P.G.	Oil	Excess Alpha
C-216 Charging	2	-	-	-	-	-	-	-	-
Carbon and Alumina Traps	-	-	28	-	-	-	-	-	-
C-816 Storage	-	-	-	1107.5 lbs.	-	-	-	-	-
Field Decon.	-	1	-	-	-	1	1	4	51

CASCADE SERVICES - cont'd

General Services

	Coolers	Valves Purged	Valves Buffered
C. C. Backwashing	-	-	-
Valve Purge. & Buff	-	-	-

FLUOROTHENE PLANT

Raw Monomer	677.0 pounds
Refined Monomer loaded	2,124.5 pounds
Monomer recovered	1,030.0 pounds
Raw Fluorothene	984.75 pounds
Avorage Polymerization	40.9%

The alcohol recovery still has been rebuilt but as yet, the new 100 psig steam line has not been insulated.

Production of raw monomer has been stopped, however, it will take about two more weeks to consume the monomer which is returned to the system via stripping. The last 500 pounds of monomer will be sold to HL-40, for research and experimental purposes at Lab D.

Experimental work is being done to determine procedures for fabricating scrap material which has previously been pressed.

PROCESS LABORATORY

I. Chemical Analyses:

Type Samples	Samples	Determinations
C-216 Conditioning	36	36
C-616 Bulb	32	8
Purge Gas (C-616)	13	13
Purge Gas (C-216)	0	0
Dew Point	74	74
Hoke Tube (C-616)	137	0
Bomb from K-631 & K-131 (C-616)	21	0
C-216 Generation	9	9
	322	140

II. Scans were made for seventeen (17) carbon traps.

III. Two (2) repair jobs were done on sampling buggies.

RADIATION MONITORING

I. Eighty seven (87), Beta-Gamma surveys were made in K-306-7, P.W.

II. [redacted]

 [redacted]

RADIATION MONITORING - cont'd

(a) Routine surveys were made at the following locations: K-306-7, P.F., - K-1303 and K-131.

(b) Air samples, surface and personnel reading were taken during the following seal changes:
K-310-2, Cell 3, 2B seal - K-303-5, Cell 1, 3B seal - K-303-1, Intersectional Cell, pumps removed, K-312-2, Cell 13, pump 2, bellows changed.

(c) Air samples, surface readings and hand counts were taken during the converter change in K-305-8, Cell 6.

(d) Air samples were taken September 15, 1948, in Area V, line recorder stations. (Inventory)

(e) Surface reading were taken on tools and equipment in K-305-12 tool room.

(f) Surface readings were taken in the maintenance shop at K-302-5.

III. One hundred eight (108) film badges were distributed.

SUMMARY:

119 Routine air samples
38 Special air samples
1,702 Surface readings
348 Hand counts.

W. C. Hartman

W. C. Hartman
Chemical Operations

WCH:gb

[redacted]

Approved for issue: G. T. E. Sheldon

Date of issue: October 1, 1948

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CARBIDE AND CARBON CHEMICALS CORPORATION

PROCESS DIVISION

CHEMICAL OPERATIONS

Weekly Progress Report for September 20, to September 27, 1948

W. C. Hartman

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By authority of: CG-PGD-1 (classification guide)
ADC / ADD Signature (first reviewer) 20 May 94 Date
Sam W. Wohlfort 5/23/94 Date
... reviewer

[redacted]

CHEMICAL AREA

Fluorine Plant

Fluorine produced	109 pounds
Consumed by Conversion Unit	43 pounds
Consumed by 300 Section	63 pounds
Consumed by 1400 Section	19 pounds

Nitrogen Plant

	L-28 (Gallons)	L-28 (Cubic Feet)	G-74 Pipeline (Cubic Feet)	G-74 Cylinders (Cubic Feet)
Process	2,149	199,857	332,350	
K-1401	732	68,076	56,060	
Laboratories	952	88,536		
Fairchild	14	1,302		
AEC	63	5,859		
Evaporation	253	23,522		
K-1405			8,620	
K-1300 Area			90	
Cylinder Stores				13,453
Y-12				14,675
Totals	4,163	387,152	397,120	28,128

Oxide Conversion Unit

Oxide charged	30,678 grams
Ash produced	10,508 grams
Fluorine used	19,504 grams

Decontamination Unit

A total of 107 items were decontaminated during the past week. Nine (9), size 3 converters were decontaminated.

Mercury Unit

Produced this week	360 pounds
Distilled Mercury on hand	72 pounds
Total shipped	784 pounds

Oil Recovery Unit

C-2144 on hand	52 pounds
MFL on hand	34 pounds
T-MFL on hand	67 pounds

RADIATION MONITORING

1. Sixty eight (68), Beta-Gamma surveys were made in K-1303.

   (a) Twelve (12), Beta-Gamma surveys were made in K-303-4.

   (b) Five (5), Beta-Gamma surveys were made in K-1410.

2. Alpha surface readings and air-borne samples:

   (a) Routine surveys were made at the following locations:
   K-306-7, P.W.
   K-1303 Cubicles.

   (b) Air samples, surface and personnel readings were taken on the following seal and pump changes:
   K-303-4, Cell 4 - 1B and 6B seals
   K-303-4, Cell 4 - 3B pump replacement.

   (c) Air samples, surface readings and personnel checks were taken in K-310-2 & 3, pipe gallery on A normal line.

3. 113 Film badges were distributed.

SUMMARY

87 Routine air samples
35 Special air samples
1,412 Surface readings
945 Personnel readings

PROCESS LABORATORY

I. Chemical Analyses:

Type Samples	Samples	Determinations
C-216 Conditioning	41	41
C-616 Bulb	2	2
Purge Gas (C-616)	28	28
Purge Gas (C-216)	4	4
Dew Point	40	40
Hoke Tube (C-616)	83	0
Bomb from K-631 & K-131 (C-616)	33	00
C-216 Generation	24	24
Totals	255	139

II. One (1) repair job was done on a sampling buggy.

III. One (1) Dew Point meter was constructed and calibrated.

IV. Scans were made on one hundred forty two (142), carbon traps.

FLUOROTHENE PLANT

Raw Monomer	0
Refined Monomer loaded	1,274.0 pounds
Monomer recovered	1,039.0 pounds
Raw Fluorothene	970.25 pounds
Average polymerization	40.9%

The alcohol recovery still was completed and tested. The still has ample heating capacity, however, a larger converter will have to be installed in order to operate with the desired capacity.

The amount of scrap Fluorothene in stores was inventoried and a procedure was developed for refabricating this material into satisfactory sheets. There is enough Fluorothene scrap in stores to supply the normal demand for 18 months if 75% of it is repressed. A report is being prepared discussing this investigation.

CASCADE SERVICES

Leak Testing

	Cells	Cell C-816 System	Bldg. Lines	Misc. Equip.	AC Pumps	Leaks Found
Vacuum Testing	0	0	5	1	0	9
Pressure Testing	0	0	4	8	1	17
CO_2 Testing	0	-	0	-	-	0

Special Materials Handling

	Cells	Misc.	Discharged and/or Charged	Issued	Visible Contam. AC Pumps	Other Equip.	Spills P.G.	Oil	Excess Alpha
C-816 Charging	1	6	-	-	-	-	-	-	-
Carbon and Alumina Traps	-	-	5	-	-	-	-	-	-
C-816 Storage	-	-	-	39 lbs.	-	-	-	-	-
Field Decont.	-	0	-	-	1	4	1	3	27

General Services

	Coolers	Valves Purged	Valves Buffered
C. C. Backwashing	0		
Valve Purg. & Buff.	-	0	28

CASCADE SERVICES - cont'd

Inter-plant Flow Lines:

Work was started on September 22, 1948, to leak test the K-25 and K-27, Inter-plant flow lines. The job involved miscellaneous valve buffering and leak testing and C-216 charging.

Soap testing was done with 10 psig. of dry air in the main pipe lines. Air was admitted from K-27 by connecting the dry air header to the K-402-9 purge header, and blocking off the main K-27, G-74 header.

Time required to pressure a line from vacuum to 0 psig. or from 0 psig. to 10 psig, was approximately 1 hour for each step. Pumping time on each of the four lines varied from 2½ to 4 hours to reach a vacuum of less than 10 microns.

Only one leak was discovered on that portion of the line which is in the field and it was on the B feed. Another major leak on the B feed line was discovered in the valve seats of the K-402-9 block valve. These seats had been previously pressure leak rated with no indication of leakage.

At the close of this report period, Cascade Services is waiting for C-216 negatives on the above lines after which a final acceptance leak rate will be taken.

for W. C. Hartman
Chemical Operations

WCH:gb

[redacted]

DISTRIBUTION

1. K-25 Site Records (RC)
2. ChemRisk/Shonka Research Associates
3. S. G. Thornton (K-25 EMD)
4. DOE Public Reading Room